

UNITED STATES DISTRICT COURT  
DISTRICT OF MASSACHUSETTS

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SINGULAR COMPUTING LLC,	)	
	)	
Plaintiff,	)	Civil Action No.
	)	19-12551-FDS
v.	)	
	)	
GOOGLE LLC,	)	
	)	
Defendant.	)	
	)	

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**ORDER ON GOOGLE'S MOTION FOR LEAVE TO SUPPLEMENT ITS NON-INFRINGEMENT AND INVALIDITY CONTENTIONS**

**SAYLOR, C.J.**

This Order resolves defendant Google's request for leave to serve supplemental non-infringement and invalidity contentions, filed August 24, 2022. (Docket No. 359).

The Local Rules for the District of Massachusetts provide that "preliminary patent-related disclosures . . . may be amended and supplemented only by leave of court upon a timely showing of good cause" and "absent undue prejudice to the nonmoving party." L.R. 16(6)(d)(5). "Non-exhaustive examples" of circumstances supporting good cause include "a claim construction by the court that is different from that proposed by the party seeking amendment within 28 days of the court's claim construction ruling." L.R. 16(6)(d)(5)(A). To determine whether good cause exists, the court should consider the moving party's diligence and any prejudice to the non-moving party. *See O2 Micro Int'l. Ltd. v. Monolithic Power Sys., Inc.*, 467 F.3d 1355, 1366 (Fed. Cir. 2006). "The burden is on the movant to establish diligence rather than on the opposing party to establish a lack of diligence." *Id.*

**A. Supplemental Non-Infringement Contentions**

**1. Contentions Incorporating *Markman* Order**

Google first seeks to amend its non-infringement contentions in response to the Court’s July 27, 2022 *Markman* order.

In its *Markman* order, the Court adopted Singular’s proposed construction of the following claim terms: it construed “execution unit” to mean “processing element comprising an arithmetic circuit paired with a memory circuit,” and “low precision and high dynamic range” (“LPHDR”) as defined in the claim. (Mem. & Order on Claim Construction at 16-26).<sup>1</sup> Google had proposed that these terms be construed to mean “low precision and high dynamic range processing element designed to perform arithmetic operations on numerical values.” *Id.*

Good cause exists for Google to amend its non-infringement contentions in light of the adverse claim construction ruling. Its motion was filed within 28 days of the order, and Singular will not suffer unfair prejudice by Google clarifying its contentions to respond to a claim construction for which Singular advocated.

Accordingly, the Court will allow Google’s proposed amendments to its non-infringement contentions to the extent that they respond to the Court’s *Markman* order.

**2. Contentions Incorporating IPR Claim Construction**

Google further seeks to amend its non-infringement contentions to respond to a claim construction Singular advocated during *inter partes* review (“IPR”) before the Patent Trial and

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<sup>1</sup> Low precision is defined in the claim as: “for at least X = 5% of the possible valid inputs to the first operation, the statistical mean, over repeated execution of the first operation on each specific input from the at least X% of the possible valid inputs to the first operation, of the numerical values represented by the first output signal of the LPHDR unit executing the first operation on that input differs by at least Y = 0.05% from the result of an exact mathematical calculation of the first operation on the numerical values of that same input.”

High dynamic range is defined in the claim as: “the dynamic range of possible valid inputs to the first operation is at least as wide from 1/1,000,000 through 1,000,000.” (Mem. & Order on Claim Construction at 16-17).

Appeal Board (“PTAB”). Singular proposed the following construction of “LPHDR execution unit” during the IPR:

[A]n execution unit that executes arithmetic operations only at low precision and with high dynamic range, wherein ‘high dynamic range’ and ‘low precision’ are defined according to the numerical requirements below.

(*See, e.g.*, Docket No. 361, Ex. 16 at 21). According to Google, the quoted definition is narrower than the one Singular advocated here, because it limits LPHDR execution units to those that “only” perform low precision arithmetic operations. (Def. Mem. at 13-14). While the PTAB rejected Singular’s proposed construction, Singular has identified that ruling as a potential issue on appeal to the Federal Circuit. (Docket No. 361, Ex. 13 at 1). According to Google, its accused products do not meet the narrower definition.

For present purposes, the Court finds that good cause exists to allow the proposed amendment. The amended contentions address a claim construction position advocated by Singular, which will not be unfairly prejudiced by Google’s response to its own proposed construction. Furthermore, Google acted with diligence in seeking to amend within two months of Singular’s notice of appeal and within 28 days of the Court’s *Markman* order.

To be clear, the Court takes no position on whether the claim construction advocated by Singular before the PTAB materially differs from that advocated by Singular and adopted by the Court here. Nor is the Court making any ruling as to the possible consequences if, in fact, Singular proposed different constructions of the same claim in this proceeding and before the PTAB.

Accordingly, the Court will allow Google’s proposed amendments to its non-infringement contentions to the extent that they respond to the construction of “LPHDR execution unit” Singular advocated during *inter partes* review.

## B. Supplemental Invalidity Contentions

Google further seeks to supplement its invalidity contentions on the ground that it needs to identify with more specificity how four previously charted prior art systems would meet the hardware requirements of the *Markman* order, or why adding such hardware would be obvious.<sup>2</sup>

### 1. Belanović and Leeser, CNAPS, and CRAY T3D References

Singular does not specifically oppose the amended invalidity contentions that refer to the Belanović and Leeser, CNAPS, or Cray T3D prior art systems.<sup>3</sup> Good cause exists to allow the proposed amendments because they clarify Google's contentions in light of the Court's claim construction ruling. Because the prior art systems were earlier identified and charted, Singular had the opportunity to conduct discovery and will not be unfairly prejudiced by their addition, and Google acted with diligence in proposing the amendments.

Accordingly, the Court will allow Google's proposed supplemental invalidity contentions to the extent that they respond to the Court's *Markman* order and discuss the Belanović and Leeser, CNAPS, and Cray T3D systems.

### 2. Hamada and Lienhart References

Singular objects to Google's proposed amendments that seek to incorporate references to two articles, one by Hamada and one by Lienhart.<sup>4</sup> Those articles were not identified as "Prior Art References" in Google's amended contentions, served in March 2021.

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<sup>2</sup> The four systems are GRAPE-3, Belanović and Leeser, CNAPS, and Cray T3D.

<sup>3</sup> Singular does argue that Google should be estopped from relying upon all of the patents and printed publications identified in its earlier invalidity contentions, apparently on the ground that they were raised or could have been raised in Google's IPR challenge to the LPHDR execution unit claim. Google referred to Belanović/Lesser, CNAPS, and Cray T3D as "systems" in its earlier invalidity contentions, which presumably exempts them from the application of IPR estoppel.

<sup>4</sup> HAMADA ET AL., PROGRAPE-1, A PROGRAMMABLE, MULTI-PURPOSE COMPUTER FOR MANY-BODY SIMULATIONS, PUBL. ASTRON. SOC. JAPAN 52 (2000); GERHARD LIENHART, ANDREAS KUGEL AND REINHARD MÄNNER, USING FLOATING-POINT ARITHMETIC ON FPGAS TO ACCELERATE SCIENTIFIC N-BODY SIMULATIONS.

Whether those amendments are permissible depends, in the first instance, on whether IPR estoppel applies to the Hamada and Lienhart references.<sup>5</sup> Section 315(e)(2) of the Patent Act states:

The petitioner in an *inter partes* review of a claim in a patent under this chapter that results in a final written decision . . . may not assert . . . in a civil action arising in whole or in part under section 1338 of title 28 . . . that the claim is invalid on any ground that the petitioner raised or reasonably could have raised during that *inter partes* review.

35 U.S.C. § 315(e)(2). *Inter partes* review is limited to invalidity grounds “that could be raised under section 102 or 103 [that is, anticipation and obviousness] and only on the basis of prior art consisting of patents or printed publications.” 35 U.S.C. § 311(b). “[E]stoppel applies not just to claims and grounds asserted in the petition and instituted for consideration by the Board, but to all grounds not stated in the petition but which reasonably could have been asserted against the claims included in the petition.” *California Inst. of Tech. v. Broadcom Ltd.*, 25 F.4th 976, 991 (Fed. Cir. 2022).

A prior art reference not raised in the IPR proceeding is subject to statutory estoppel if (1) the IPR petitioner actually knew of the reference or (2) a skilled searcher conducting a diligent search reasonably could have been expected to discover the reference. *Palomar Techs., Inc. v. MRSI Sys., LLC*, 2020 WL 2115625, at \*3 (D. Mass. May 4, 2020). Google filed for IPR between October 30 and November 6, 2020. (Docket No. 366, Gannon Decl. ¶¶ 2-4). It produced the Lienhart article to Singular during discovery on November 6, 2020; the Hamada article is referred to in two other articles it produced to Singular on the same date. (Gannon Decl. ¶ 6-7). It is therefore evident that Google knew of, or could have discovered with reasonable diligence, the Hamada and Lienhart references at the time it filed for IPR review.

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<sup>5</sup> The Court is not at this time addressing whether IPR estoppel applies to any prior art references to which Singular has not specifically objected.

Google nonetheless contends that IPR estoppel does not apply because it is not relying on the Hamada and Lienhart articles as prior art. Instead, it contends that the combination of the GRAPE-3 system and those articles renders Singular's claims obvious in light of the *Markman* order. But regardless of the label Google employs, it clearly intends to use the articles as prior art. Put another way, those publications are prior art whether they stand alone, are offered in combination with each other, or are offered in combination with a system. A party cannot "simply swap[] labels for what is otherwise a patent or printed publication invalidity ground in order to 'cloak' its prior art ground and 'skirt' estoppel." *Vaporstream, Inc. v. Snap Inc.*, 2020 WL 136591, at \*23 (C.D. Cal. Jan. 13, 2020). *See also Biscotti Inc. v. Microsoft Corp.*, 2017 WL 2526231, at \*8 (E.D. Tex. May 11, 2017) (petitioner estopped from presenting patents and printed publications at trial where "purported system prior art relies on or is based on patents or printed publications that . . . a skilled searcher conducting a diligent search reasonably could have been expected to discover" (internal quotation marks omitted)). And while Google contends that reference to the articles is necessary in light of the *Markman* order, it does not offer any explanation as to why that is true.

Under the circumstances, the proposed amendments incorporating references to Hamada and Lienhart would effectively serve to avoid the IPR estoppel bar of 35 U.S.C. § 315(e)(2), and therefore will not be permitted. Accordingly, Google's proposed amendments incorporating references to Hamada and Lienhart will be denied.

## II. Conclusion

For the foregoing reasons, Google's motion to amend its non-infringement and invalidity contentions is DENIED to the extent that the proposed amended contentions include references to the Hamada and Lienhart articles identified in footnote 4 of this Memorandum and Order, and otherwise GRANTED.

**So Ordered.**

*/s/ F. Dennis Saylor IV*

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F. Dennis Saylor IV

Chief Judge, United States District Court

Dated: October 28, 2022